M/035/015

DIVISION OF WATER QUALITY
UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
PUBLIC NOTICE OF RENEWAL OF GROUND WATER DISCHARGE PERMIT
PERMIT NO. UGW350011

PURPOSE OF PUBLIC NOTICE

THE UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY IS SOLICITING COMMENTS ON ITS PROPOSAL TO ISSUE THE GROUND WATER DISCHARGE PERMIT DESCRIBED BELOW UNDER AUTHORITY OF THE UTAH WATER QUALITY ACT, SECTION 19-5-104(1)(I) UTAH CODE ANNOTATED 1953, AS AMENDED AND UTAH ADMINISTRATIVE CODE R317-6.

PERMIT INFORMATION

PERMITTEE NAME:	KENNECOTT UTAH COPPER
MAILING ADDRESS:	P.O. BOX 6001 MAGNA, UTAH 84044-6001
FACILITY LOCATION:	THE TAILINGS IMPOUNDMENT IS A 9000 ACRE FACILITY NORTH OF THE TOWN OF MAGNA, UT.

KENNECOTT UTAH COPPER OPERATES THE TAILINGS IMPOUNDMENT AT THE NORTH END OF THE OQUIRRH MOUNTAINS TO CONTAIN TAILINGS FROM COPPER ORE MINED IN THE BINGHAM CANYON MINE. THE CURRENT DISCHARGE VOLUME INTO THE IMPOUNDMENT IS APPROXIMATELY 170,000 TONS PER DAY OF TAILINGS AND OTHER PERMITTED WASTE STREAMS. THE PROPOSED RENEWED GROUND WATER DISCHARGE PERMIT INCORPORATES GROUND WATER AND SURFACE WATER MONITORING, AND ESTABLISHES PROTECTION LEVELS FOR GROUND WATER QUALITY.

PUBLIC COMMENTS

PUBLIC COMMENTS ARE INVITED ANY TIME PRIOR TO TUESDAY, JANUARY 3, 2006. WRITTEN COMMENTS MAY BE DIRECTED TO THE DIVISION OF WATER QUALITY, P.O. BOX 144870, SALT LAKE CITY, UT 84114-4870. ALL COMMENTS RECEIVED PRIOR TO TUESDAY, JANUARY 3, 2006, WILL BE CONSIDERED IN THE FORMULATION OF FINAL DETERMINATIONS TO BE IMPOSED ON THE PERMIT. A PUBLIC HEARING MAY BE HELD IF WRITTEN REQUESTS ARE RECEIVED WITH THE FIRST 15 DAYS OF THIS PUBLIC COMMENT PERIOD THAT DEMONSTRATE SIGNIFICANT PUBLIC INTEREST AND SUBSTANTIVE ISSUES EXIST TO WARRANT HOLDING A HEARING.

FURTHER INFORMATION

ADDITIONAL INFORMATION MAY BE OBTAINED UPON REQUEST BY CALLING ED HICKEY AT (801) 538-6146 OR BY WRITING THE AFOREMENTIONED ADDDRESS. RELATED DOCUMENTS ARE AVAILABLE FOR REVIEW DURING NORMAL BUSINESS HOURS AT THE DIVISION OF WATER QUALITY, 288 N. 1460 W., SALT LAKE CITY, UTAH.

IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, INDIVIDUALS WITH SPECIAL NEEDS (INCLUDING AUXILIARY COMMUNICATIVE AIDS AND SERVICES) SHOULD CONTACT

CHARLENE LAMPH, OFFICE OF HUMAN RESOURCES AT (801) 536-4413 (TDD 536-4414).

STATE OF UTAH
DIVISION OF WATER QUALITY
UTAH WATER QUALITY BOARD
SALT LAKE CITY, UTAH 84114-4870

GROUND WATER DISCHARGE PERMIT
Permit No. UGW350011

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

KENNECOTT UTAH COPPER CORPORATION
8315 WEST 3595 SOUTH
P.O. BOX 6001
MAGNA, UTAH 84044-6001

hereafter referred to as the "Permittee" is granted a ground water discharge permit for the operation of the **Tailings Impoundment** in Salt Lake County, Utah.

The Tailings Impoundment is located on the following tract of land (Salt Lake Base and Meridian):

Township 1 South, Range 2 West - Portions of Sections 5,6,7,8,9,17,18,19, and 20
Township 1 South, Range 3 West - Portions of Sections 1,2,3,10,11,12,13,14,15,23,24
Township 1 North, Range 2 West - Portions of Section 31
Township 1 North, Range 3 West - Portions of Section 35 and 36

The permit is based on representations made by the permittee and other information contained in the administrative record. It is the responsibility of the permittee to read and understand all provisions of this permit.

The facility shall be constructed and operated in accordance with conditions set forth in the permit and the Utah Administrative Rules for Ground Water Quality Protection (R317-6).

This Ground Water Discharge Permit for the Tailings Impoundment supersedes all other Ground Water Discharge Permits for this facility previously issued.

This permit shall become effective on January 6, 2006.

This permit and the authorization to operate shall expire at midnight, January 6, 2011.

Signed this 6th day of January, 2006.

Walter L. Baker
Executive Secretary
Utah Water Quality Board

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I. SPECIFIC PERMIT CONDITIONS

A. Ground Water Classification and Protection Levels

The ground water classification for the uppermost aquifer in the area of the Tailings Impoundment ranges from Class II to Class IV ground water, with water near the Oquirrh Mountains generally Class II and water adjacent to the Great Salt Lake generally Class IV. Ground water at each compliance monitoring well has been classified based on historical monitoring data.

Ground Water Protection Levels for compliance monitoring wells for this permit are represented in Table 1. Protection levels are based on background sampling performed to date and the criteria of R317-6-4. Protection Levels are based on the greater of the protection level or the compliance limit (mean background plus twice the standard deviation). Protection levels for any new or replacement compliance monitoring wells approved by the Division and installed during the term of this permit will be set following an accelerated sampling program (eight times over a one year period).

B. Best Available Technology Performance Standard

1. The Best Available Technology for the Tailings Impoundment will be a Discharge Minimization approach operated in accordance with the approved designs and specifications.

2. The Tailings Impoundment is comprised of two sections, an older South Impoundment and a North Impoundment. Active tailings disposal occurs only in the North Impoundment. Tailings disposal into the South Impoundment ceased in October 2002. Only Mine Waste materials that originate from the Bingham Canyon Mine, and related processing waste may be disposed of in the Tailings Impoundment unless prior approval for disposal of other waste streams is obtained from the Executive Secretary.

South Impoundment - The Lake Bonneville Clay (Bonneville Clay) is a lacustrine clay layer varying from 9 to 15 feet thick with low permeability that underlies over 90% of the existing impoundment. The Bonneville clay serves as a natural liner for the impoundment. A radial discharge capture ditch system exists for most of the South Impoundment to route lateral seepage from the tailings back into the process water network for recycle or for discharge under UPDES Permit No. UT0000051.

North Impoundment - The entire North Impoundment area is underlain by the Bonneville Clay. This low permeability lacustrine clay layer serves as a natural liner for the North Impoundment. A 36-inch blanket drain consisting of crushed slag placed between filter material has been placed in the base of the impoundment. This drain layer will promote horizontal seepage of process water through the embankment and into the perimeter toe drain collection ditch and reduce, somewhat, the potential for vertical migration of tailings waters. The collection ditch around the perimeter of the North Impoundment is utilized to capture lateral seepage from the blanket drain and route waters back into the process water makeup system.

Diving Board Area - This area is contained by earthen dikes composed of low permeability native materials and is underlain by the low permeability lacustrine clays typical of this area.

3. Closure
Both the South and North sections of the Tailings Impoundment shall undergo closure in accordance with the requirements of the approved closure plan.

C. Permitted Facilities

The Facilities authorized under this permit include:

1. The South Impoundment near Magna Utah
2. The North Impoundment, located east of HWY 202 and south of I-80
3. The Diving Board Area, located south of State Road 201, and west of 9180 West

D. Permitted Inflow Waste Streams

The waste streams that are permitted for placement in the existing and expansion portion of the Tailings Impoundment include:

1) Copper Tailings from the Copperton Concentrator
2) Slag Tailings from the slag concentrator at the Smelter
3) Power plant ash slurry
4) Smelter process waters
5) Wastewater effluent slurry from the Hydrometallurgical Plant at the Smelter
6) Mine leach water and meteoric contact water that have been treated in the tailings pipeline
7) Wastewater effluent from the Reverse Osmosis treatment of sulfate

contaminated waters
8) Neutralization of acid-mine contaminated waters
9) Barneys Canyon pit dewatering and heap leach pad draindown waters
10) Construction, maintenance and lunchroom trash
11) Treated effluent from the sewage treatment plant
12) Other inflows that are approved by the Executive Secretary for this permit

Kennecott shall obtain approval from the Executive Secretary prior to disposing of mine waste from ore, concentrate, or other materials that do not originate in the Bingham Canyon Mine or other listed waste streams. The use of off site anodes, scrap copper, reagents or materials to process ore, slag, or other materials does not trigger this requirement. The request to dispose of off site materials shall include characterization of the wastes using the Synthetic Precipitation Leaching Procedure (EPA SW846 Method 1312) for mining waste streams and the Toxicity Characteristic Leaching Procedure (EPA SW846 Method 1311) for non-mining waste streams. Further analysis may be required by the Executive Secretary to adequately characterize off site materials. Materials authorized for storage in Arthur Stepback Repository are described in U.S. EPA Record of Decision for Kennecott North and South Zone Sites, dated September 26, 2002.

E. Monitoring

1. General Provisions

a) *Future Modification of the Monitoring Network* - If at any time the Executive Secretary determines the monitoring program to be inadequate, Kennecott shall submit within 30 days of receipt of written notice from the Executive Secretary a modified monitoring plan that addresses the inadequacies noted by the Executive Secretary.

b) *Compliance Monitoring Period* - Monitoring shall commence upon issuance of this permit and shall continue through the life of this permit. For compliance monitoring wells that are installed during the term of this permit, monitoring shall commence upon completion of the well installation and development.

c) *Laboratory Approval* - All water quality analyses shall be performed by a laboratory certified by the State of Utah to perform such analysis.

d) *Water Level Measurement* - In association with each well sampling event, water level measurements shall be made in each monitoring well prior to removal of any water from the well bore. These measurements will be made from a permanent single reference point clearly marked on the top of the well or surface casing. Measurements will be made to the nearest 0.01 foot.

e) *Sampling Protocol* - Water quality samples will be collected, handled, and analyzed in conformance with the currently approved version of the Kennecott Ground Water Characterization and Monitoring Plan.

f) *Constituents Sampled* - The following analysis shall be performed on all water monitoring samples collected:

i) Field Measurements: pH, specific conductance, temperature

ii) Laboratory Analysis:

- Total Dissolved Solids (TDS)
- Major Ions: chloride, sulfate, alkalinity, sodium, potassium, magnesium, and calcium
- Metals (dissolved): arsenic, barium, cadmium, chromium, copper, lead, selenium, silver, zinc, and fluoride
- Radionuclides: Uranium, Radium 226, Radium 228, Gross Alpha, and Gross Beta Particle for NET1386 A&B, and NET1393 A&B

2. Operational Monitoring

Operational Monitoring will be used to assure inflows and interstitial waters are consistent with the approved BAT performance standards for this permit.

a) Tailings Waters - Kennecott shall characterize the quality of tailings waters by monitoring interstitial waters (within the tailings), water from the top of the impoundment, and other outflows such as seeps in accordance with the Compliance and Operational Monitoring

Plan incorporated as Appendix B of this permit.

b) Monitoring of Inflows - Each inflow to the Tailings Impoundment listed in Section I Part D except solid waste such as Construction, maintenance and lunch room trash, shall be characterized using at a minimum the Synthetic Precipitation Leaching Procedure (SPLP) (EPA SW846 Method 1312) and total metals analysis. The details for monitoring of inflows are described in the Compliance and Operational Monitoring Plan (Appendix B).

c) Kennecott shall perform ongoing monitoring of tailings materials inflow for acid generation potential. These characterizations shall be performed in accordance with the Assessment of Acidification Potential Plan incorporated as Appendix A of this permit.

3. Monitoring Frequency

a) *Well Monitoring Frequency* - All existing compliance monitoring wells will be sampled according to the frequency listed in Table 1 of Appendix B throughout the term of this permit. All new and replacement compliance monitoring wells will be sampled eight times over a one year period following installation to establish baseline ground water quality. Following completion of accelerated sampling, monitoring may change to a semiannual sampling frequency.

b) *Operational Monitoring Frequency* - Operational monitoring including monitoring of inflows shall occur semi-annually throughout the term of this permit, except for tailings underflow samples noted in Standard Operating Procedure #3 of Appendix A. South Impoundment lysimeters will be sampled annually.

c) Radionuclides and uranium shall be sampled once every five years prior to permit renewal. Analytical results shall be submitted in the ground water discharge permit renewal application.

F. Demonstration of Compliance

1. Probable Out of Compliance for Ground Water Protection Levels - If the concentration of any pollutant exceeds the higher of the protection level or compliance limit (Table 1) in any compliance monitoring well, Kennecott shall:

a. Notify the Executive Secretary within 30 days of receipt of the data;

b. Initiate monthly sampling for the well(s) that have exceeded the Permit Limit, unless the Executive Secretary determines that other periodic sampling is appropriate, for a period of two months or until the compliance status of the facility can be determined.

2. Out of Compliance Status for Ground Water Protection Levels

Out of compliance status exists when:

a. Two or more consecutive samples from a compliance monitoring well exceed one or more protection levels; and

b. Two or more consecutive samples from the same compliance monitoring well exceed the compliance limit (Table 1) for that well: or

The concentration of any pollutant in two or more consecutive samples is statistically significantly higher than the applicable protection level. Statistical significance shall be determined using methods described in Statistical Methods for Evaluating Ground Water Monitoring Data from Hazardous Waste Facilities, Vol. 53, No. 196 (Federal Register, Oct. 11, 1988)

c. Upon determining that an out of compliance situation exists, Kennecott shall:

i) Notify the Executive Secretary of the out of compliance status within 24 hours of detection followed by a written notice within 5 days of the detection.

ii) Initiate monthly sampling unless the Executive Secretary determines that other periodic sampling is appropriate until the facility is brought into compliance.

iii) Submit a Source Assessment and Compliance Schedule to the Executive Secretary within 30 days of detection of the out of compliance status that outlines the following:

- Steps of action that will assess the source, extent, and potential dispersion of the contamination.

- Evaluation of potential remedial actions to restore and maintain ground water quality and ensure the permit limits will not be exceeded at that compliance monitoring point.

- Measures to ensure best available technology will be re-established.

iv) Implement the Source Assessment and Compliance Schedule as directed by the Executive Secretary.

G. Non- Compliance for Best Available Technology

Kennecott is required to maintain the Best Available Technology in accordance with the approved design and practice for this permit. Failure to maintain BAT or maintain the approved design and practice shall be a violation of this permit. In the event a compliance action is initiated against the permittee for violation of permit conditions relating to best available technology, Kennecott may affirmatively defend against that action by demonstrating the following:

a. Kennecott submitted notification in accordance with R317-6-6.13;

b. The failure was not intentional or caused by Kennecott's negligence, either in action or in failure to act;

c. Kennecott has taken adequate measures to meet permit conditions in a timely manner or has submitted for the Executive Secretary's approval, an adequate plan and schedule for meeting permit conditions; and

d. The provisions of UCA 19-5-107 have not been violated.

H. Reporting Requirements

1. Reporting

a. *Monitoring Wells* - Water quality sampling results for monitoring wells shall be submitted semi-annually to the Executive Secretary as follows:

Quarter Sampled In	Report Due On

1st	(Jan., Feb., March)	August 15
2nd	(April, May, June)	August 15
3rd	(July, Aug., Sept.)	February 15
4th	(Oct., Nov., Dec.)	February 15

b. *Operational Monitoring* - Operational monitoring results including interstitial waters, decant pond flows, tailings inflows, and acidification analysis shall be submitted in an annual report by March 31 of each year.

Failure to submit reports within the time frame due shall be deemed as noncompliance and may result in enforcement action.

I. Compliance Schedule

1. *Documentation of New and Replacement Well Installations* - Within 60 days of completion of any new or replacement monitoring, Kennecott shall submit documentation on the wells demonstrating that each well is in conformance with the EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, 1986, OSWER-9950.1 (RCRA TEGD) Section 3.5.

2. *Corrective Action* - Within 180 days of notification by the Executive Secretary that corrective action is not proceeding in a timely fashion, Kennecott shall submit for approval a Contamination Investigation and Corrective Action Plan to clean up contamination problems associated with the Tailings Impoundment. The Contamination Investigation and Corrective Action Plan shall be compiled in accordance with R317-6-6.15

4. *Permit Renewal Application Items* - As a part of the application for permit renewal each five years, Kennecott will include water level data and a potentiometric surface map for both the shallow and principal aquifer systems within at least a one mile perimeter and underlying the impoundment. The water level data and maps will delineate temporal changes in water levels that have occurred during the term of the permit. Monitoring results for radionuclides and uranium in wells NET1386A&B and NET1393A&B.

4. *Tailings Impoundment Closure Plan* - At any time during the effective period of this permit, Kennecott shall submit within 180 days of written request by the Executive Secretary, a revised closure plan for the existing and expansion portions of the Tailings Impoundment. The closure plan for the Tailings Impoundment is contained within "Reclamation and Water Management Plan, Kennecott Utah Copper Corporation, Bingham Canyon Mine" submitted in March 2003. Within three years of mine closure Kennecott must submit a final set of engineered drawings and plans that clearly define the scope of the final closure for the North and South portions of the Tailings Impoundment. The plan will provide details on all aspects of closure that are related to or have an impact on surface water or ground water quality, including all pre- and post-mine closure water sources. For any issues that require further study prior to finalizing aspects to the closure plan, details on what each study will include, and a schedule with milestones for each segment of the study shall be included in Kennecott's revised plan.

Part II
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II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.

B. Analytical Procedures Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3L, unless other test procedures have been specified in this permit.

C. Penalties for Tampering The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Reporting of Monitoring Results Monitoring results obtained for each monitoring period specified in the permit, shall be submitted to the Executive Secretary, Utah Division of Water Quality at the following address no later than 45 days after the end of the monitoring period:

Attention: Compliance and Monitoring Program
State of Utah
Utah Department of Environmental Quality
Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114-4870

E. Compliance Schedules Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

F. Additional Monitoring by the Permittee If the permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.

G. Records Contents Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;

3. The date(s) and time(s) analyses were performed;

4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

H. Retention of Records The permittee shall retain records of all monitoring information, including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Executive Secretary at any time.

I. Twenty-four Hour Notice of Noncompliance and Spill Reporting

1. The permittee shall verbally report any noncompliance, or spills subject to the provisions of UCA 19-5-114, which may endanger public health or the environment as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24 hour number, (801) 536-4123, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am - 5:00 PM Mountain Time).

2. A written submission shall also be provided to the Executive Secretary within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected; and,

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. Reports shall be submitted to the addresses in Part II D, Reporting of Monitoring Results.

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J. Other Noncompliance Reporting Instances of noncompliance not required to be reported within 24 hours, shall be reported at the time that monitoring reports for Part II D are submitted.

K. Inspection and Entry The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

Part III
Permit No.
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III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions. The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under Section 19-5-115(2) of the Act a second time shall be punished by a fine not exceeding $50,000 per day. Nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

Part IV
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UGW350011

IV. GENERAL REQUIREMENTS

A. Planned Changes. The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.

B. Anticipated Noncompliance. The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a permit renewal or extension. The application should be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information. The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Executive Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary, upon request, copies of records required to be kept by this permit.

F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.

G. Signatory Requirements. All applications, reports or information submitted to the Executive Secretary shall be signed and certified.

1. All permit applications shall be signed as follows:

   a. For a corporation: by a responsible corporate officer;
   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
   c. For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to Authorization. If an authorization under Part IV G 2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV G 2. must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall,

upon conviction be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports. Except for data determined to be confidential by the permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Executive Secretary. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

J. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

L. Transfers. This permit may be automatically transferred to a new permittee if:
1. The current permittee notifies the Executive Secretary at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittee containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,
3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-117 of the Act.

N. Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include

pollutants covered by new standards. The permittee may apply for a variance under the conditions outlined in R317-6-6.4(D)

2. If alternate compliance mechanisms are required.

3. If water quality of the facility is significantly worse than represented in the permit application.

4. If results from operational monitoring indicate acidification of the Tailings Impoundment is occurring or is likely to occur in the future or chemical makeup of the waste streams has changed significantly enough to effect a change in impacts to ground water.

5. If detections of radionuclides and uranium in NET1386A&B and NET1393A&B exceed Utah Ground Water Quality Standards.

6. If the Arthur Stepback Repository oversight currently provided by the EPA under the Consent Decree for the Kennecott North End Remedial Action ends and oversight is transferred to the Utah Department of Environmental Quality.

The Principal Aquifer is a confined system which includes a gravel zone and lacustrine deposits. The gravel zone was most likely derived from the local mountains during an extensive low lake cycle. Many high yield water supply wells near the Oquirrh Mountains are completed in the gravel zone of the Principal Aquifer. The lacustrine zone consists of clay, silt and interbedded fine sand. Ground water flow direction for this aquifer is north toward the Great Salt Lake. Except directly beneath the existing Tailings Impoundment, measured water levels in the principal aquifer are above ground level at locations north of Highway 201 indicating an upward hydraulic gradient throughout the vicinity of both impoundments. A ground water mound, with downward vertical gradients, exists directly beneath the impoundments. Water quality in the Principal Aquifer is generally better than the Shallow Aquifer, with TDS values ranging from 700 to 40,000 mg/l. The higher TDS values correlate with proximity to the Great Salt Lake. Metals values for arsenic, selenium, and cadmium in excess of Utah Ground Water Quality Standards have been observed in the Principal Aquifer.

The Shallow Aquifer system consists of interbedded lacustrine Bonneville clay, silt, and fine sand. The exact depth of this system varies but is approximately the upper 35 to 50 feet of saturated sediments. The potentiometric surface for the Shallow Aquifer system depicts lateral flow in a northerly direction toward the Great Salt Lake. An upward hydraulic gradient from the underlying Principal Aquifer exists for the majority of wells completed in the shallow aquifer system. A ground water mound exists directly beneath the Tailings Impoundment with downward vertical gradients indicating a potential for discharge of tailings water into the shallow system. Water quality in this system varies markedly from the contact with the bedrock system on the south showing good quality waters with TDS values around 1000 mg/l to TDS values exceeding 200,000 mg/l in the vicinity of the Great Salt Lake. Metals values for arsenic, selenium, and cadmium in excess of Utah Ground Water Quality Standards have been observed in the shallow aquifer.

Description of Facility Operations

South Impoundment – Tailings deposition into the South Impoundment ceased in October 2002. —Draindown water from the South Impoundment is collected in the clarification canal and toe drains that have been constructed around the perimeter of the impoundment. When necessary, the water in the clarification canal can be discharged through UPDES permitted discharge points. Some seepage from the impoundment enters the shallow aquifer system. Kennecott estimates this amount at 620 gallons per minute, however, this will gradually decrease over time due to the establishment of a vegetative evapotranspiration (ET) cover.

A sedimentation pond has been constructed east of the southeast corner of the South Impoundment to allow for further clarification of the draindown water to reduce total suspended solids on an as needed basis prior to return of water to the process circuit.

The Sedimentation Pond is also underlain by the low permeability Bonneville Clay.

The Diving Board area is located immediately south of State Road 201 and west of 9180 West. This area is a small earthen impoundment designed to retain tailings discharges resulting from scheduled shutdowns and temporary upsets. Drainage from this area is collected via a ditch and channeled to the clarification canal. Accumulated tailings are periodically excavated and transferred from the Diving Board area to the Tailings Impoundment.

North Impoundment - The North Impoundment is underlain by the Bonneville Clay, a thick and areally extensive lacustrine deposit. This contiguous stratum represents the top layer of a several hundred foot thick sequence of fine-grained lacustrine sediments. Tailings are deposited into the North Impoundment in slurry form via a single point discharge system that deposits tailings into the interior as well as through two main discharge facilities (cyclones). Cyclones direct overflow (fine-grained material) to the interior and the underflow (coarse material) to the embankment. A three foot thick blanket drain layer of crushed slag constructed in the base of the embankment promotes horizontal seepage of process water through the embankment and blanket drain and into the perimeter toe drain collection ditch. This water is recycled back to the Copperton Concentrator. Water is also removed through a decant pond. When necessary, the water can be discharged through a UPDES permitted discharge point.

Construction of the North Impoundment embankment is proceeding in advance of tailings deposition. There are insufficient tailings available on an annual basis to construct the full width of the north embankment, therefore it will be constructed in two phases. Phase 1 includes the Zone A embankment that was constructed on a 3ft thick composite slag aggregate drainage blanket. Phase 1 is nearing completion and the Zone A embankment allows storage of tailings through approximately 2013. Phase 2 construction will include Zones B&C, which will essentially cover and expand beyond the Zone A embankment. A system of finger drains will be constructed and tied into the drainage blanket to facilitate dewatering of the tailings. Closure of the North Impoundment will be conducted similar to the South Impoundment.

Bevill Excluded Wastes - Congress granted an exclusion from the requirements of the hazardous waste program for certain mining wastes. This exclusion, known as the Bevill Amendment, identifies solid wastes from the extraction, beneficiation, and processing of ores and minerals and excludes them from the requirements of the EPA Hazardous Waste Program. The basis of this exclusion was that these wastes are characterized by high volume, low hazard, and that management as hazardous waste may be inappropriate. On June 23, 1990 EPA issued a final rule that listed 20 mineral processing wastes that are excluded. Three of the ten inflows to the Tailings Impoundment are included under this Bevill exclusion and therefore are not subject to the requirements of the Hazardous Waste Program.

Waste Stream Inflows - Waste stream inflows authorized under this permit for

placement in the Tailings Impoundment are:

1) Copper tailings from the Copperton Concentrator
2) Slag tailings from the slag concentrator at the Smelter
3) Power plant ash slurry
4) Smelter process waters
5) Wastewater effluent slurry from the Hydrometallurgical Plant at the Smelter
6) Mine leach water and meteoric contact water that have been treated in the tailings pipeline
7) Wastewater effluent from the Reverse Osmosis treatment of sulfate contaminated waters
8) Neutralization of acid-mine contaminated waters
9) Barneys Canyon mine pit dewatering and heap leach pad draindown waters
10) Construction, maintenance and lunchroom trash
11) Treated effluent from the sewage treatment plant
12) Other inflows that are approved by the Executive Secretary for this permit

The first three waste streams listed are included under the regulatory exclusion from RCRA as Bevill waste. Over 99% of the volume of materials placed in the impoundment are copper tailings. Items 7 and 8 are new disposal inflows into the Tailings Impoundment. Following settlement of a natural resources damage claim, the State of Utah has approved a plan to clean up contaminated ground water in the Southwest Jordan Valley area of Salt Lake County. Over the next 40 years, extraction and treatment of ground water from contaminated zones will remove contaminants and provide municipal-quality drinking water to the public. By removing contaminated water from the underlying aquifer, the project will also improve ground water quality and prevent further migration of the contamination in the valley. In the absence of a better disposal option for contaminants removed from the treated water, the treatment concentrates will be introduced into the tailings pipeline for disposal in the Tailings Impoundment. The concentrate streams represent less than 4 percent of the total volume of material placed in the Tailings Impoundment.

These sources enter the Tailings Impoundment at the following discharge points:

1) West Cyclone Station
2) East Cyclone station
5) North Impoundment Single Point Discharge
4) North Impoundment Peripheral Discharge

Corrective Action Clean Up

The Utah Administrative Rules for Ground Water Quality Protection (R317-6) require applicants to submit a corrective action plan or other response measures to be taken to remedy any violation of ground water quality standards resulting from discharges occurring prior to issuance of a ground water discharge permit. The permit has a compliance condition that allows the Executive Secretary to call for a Contamination Investigation and Corrective Action Plan to be submitted and made a part of this permit should future data indicate that clean-up of existing contamination

at the Tailings Impoundment site is in fact needed.

Background Water Quality

Assessing background water quality is a complicated exercise for the area around the Tailings Impoundment. Several complicating factors impede measurement or estimation of true background. There are two previously existing facilities that may have impacted ground water quality. The abandoned Morton Salt operation and the Chevron Phosphate operation are within the footprint of the North Impoundment. These operations have likely complicated the ability to observe any impacts from tailings. In addition, given the nearly century-long history of operations, impacts from the Tailings Impoundment have probably already occurred.

In light of the aforementioned complicating factors, Ground Water Protection Levels for this permit are established using existing water quality on a well-by-well basis. This approach ensures that the existing water quality will be protected by not allowing significant degradation from existing protection levels. There are several compliance monitoring wells that are relatively close to the bedrock contact and that reflect Class II water quality. These wells are assigned protection levels consistent with Class II waters. The majority of the compliance monitoring wells are placed in Class III ground water. These wells are assigned protection levels consistent with Class III ground water. Additionally, the method given in R317-6-4.6.A.3, which allows for a no net increase standard for Class III waters when the background concentration already exceeds the ground water quality standard, is used where indicated. Compliance wells completed in Class IV ground water are assigned protection levels equal to the ground water quality standards (same as drinking water MCL's) or the background value plus two standard deviations (whichever is higher) with the exception that TDS limits are not imposed for Class IV waters. Due to influences of the Great Salt Lake, TDS values in the Class IV wells range from 18,000 to over 100,000 mg/l. The basis for assigning protection levels (except TDS) to Class IV waters that are in close proximity to the Great Salt Lake is to protect wetlands systems that exist in proximity to the lake and serve as habitat for shore birds and other aquatic species.

In several Class III wells, the background value for arsenic exceeds the ground water quality standard of 0.05 mg/l. In these cases a protection level equal to the background value has been set as the protection level for this situation as indicated by R317-6-4.6 (no net increase). However, because sample results from these wells will routinely exceed the background value due to normal variation around the mean, probable out of compliance is defined as when concentrations exceed the background value plus two standard deviations (referred to as the compliance limit in Table 1).

Kennecott has conducted Toxic Characteristic Leaching Procedure (TCLP) and Synthetic Precipitation Leaching Procedure (SPLP) analysis of tailings material to describe the toxicity of the tailings even though this material is not subject to RCRA requirements. Both TCLP and

SPLP analysis did not reveal any toxicity concerns. Analytical results of these tests were below the detection limit except for barium. Barium values from the TCLP analysis ranged from 0.2 to 0.4 mg/l. The TCLP maximum limit for barium is 100 mg/l. The interstitial waters in the tailings have been characterized and do not appear problematic. To assure that the waste streams going into the Tailings Impoundment do not contain materials that differ markedly from those waste streams that have been characterized, the permit requires only materials of Bingham Pit origin and related processing wastes be disposed of in the Tailings Impoundment. There is a provision that allows Kennecott to request a variance from this standard for incidental situations that would not impact overall water quality of the impoundment.

Kennecott utilizes a discharge minimization approach with a monitoring component to assess if any impacts occur. Discharge minimization is achieved through use of a natural clay liner beneath the impoundment to impede downward flow of tailings waters. The proposed liner consists of the upper portion of the Bonneville Clay, which is generally 9 feet thick and is continuous throughout the expansion area. Vertical hydraulic conductivities for this segment of the Bonneville Clay have been measured ranging from 3×10^{-7} cm/sec to 4×10^{-8} cm/sec. The proposed liner technology appears to meet the requirements of R317-6-6.4 A3 and C3. Best Available Technology is defined in R317-6-1.3 as"... the application of design, equipment, work practice, operation standard or combination thereof at a facility to effect the maximum reduction of a pollutant achievable by available processes and methods taking into account energy, public health, environmental and economic impacts and other costs."

Given the liner alternatives that exist and the logistical as well as economic challenges of installation of a liner system in the north expansion portion, an area of approximately 3,300 acres, the best alternative is utilization of the Bonneville Clay as the liner to minimize seepage out of the impoundment.

The compliance well monitoring network will be comprised of 28 wells in 15 locations. Most locations contain two wells: one screen interval in the upper shallow unconfined aquifer and one screen interval completed in the lower confined aquifer. The perimeter of the south and north impoundment is approximately 14 miles in length. The15 locations comprise a well frequency of about one well location per mile of embankment.

Potential Impacts to Water Quality

With the height of Tailings Impoundment reaching over 200 feet, it is likely that downward hydraulic gradients will develop and allow some movement of tailings interstitial waters through the Bonneville Clay and into the underlying aquifer systems. The average concentrations of contaminants in the interstitial waters of the tailings, when compared to the concentrations in the shallow and principal aquifers, are summarized in Table S-1 of this Statement of Basis.

While the numbers in Table S-1 are average values and some individual values may differ significantly, it is anticipated that the overall water quality of the shallow and principal aquifers will not be degraded by water from the impoundment. Interstitial waters and toe drain (recycled) waters from the impoundment will continue to be

sampled semi-annually throughout the term of this permit to provide a check on quality of these waters.

One of the most important technical issues associated with the Tailings Impoundment is the long term potential for acidification of the tailings materials. The chemical reactions associated with oxidation of sulfides results in production of acid, which if not neutralized could, over time, acidify the tailings materials. Should this happen, leaching of metals and other constituents that are not mobile in neutral pH conditions may occur. Kennecott conducts static and kinetic testing of tailings materials to predict the potential for the tailings to acidify over time. Results to date indicate that the potential for the fine fraction tailings (overflow) to go acidic are low. The coarse fraction (underflow) can acidify under conditions mentioned above. To assure that signs of acidification are not showing up through the life of the impoundment, Kennecott is required to monitor the interstitial water within the tailings and to perform analysis of the copper tails inflow to the impoundment on a semi-annual basis. Surface sites on the impoundment exterior are also sampled and analyzed for acidification potential. Over time, these data may provide useful information on whether acidification of tailings is a potential risk.

The North Impoundment covers a phosphogypsum tailings pile (gypstack) in the northwestern corner of the expanded impoundment. This tailings pile was part of a phosphate fertilizer production facility that was not affiliated with Kennecott Utah Copper Corporation. Downward hydraulic gradients could move gypstack pore fluids into the shallow aquifer and toward the toe drain. Hydraulic conductivity modeling has estimated a very slow rate of travel in the mine tailings and aquifer. Two monitoring well pairs were installed to detect effects, if any, from burial of the phosphogypsum tailings. These wells have completed 8 years of background monitoring to establish background levels of radionuclides. Monitoring frequency will be changed to once every five years, until such time that detections of radionuclides and uranium exceed Utah Ground Water Quality Standards.

Basis for Permit Issuance

As a basis for issuance and renewal of the ground water discharge permit as required under UAC R317-6-6.4 and to assure adequate ground water quality protection, the facility has been designed to employ discharge control technology and ground water monitoring to prevent any impairment of present and future beneficial uses of the ground water.

Ground water monitoring is the primary compliance monitoring method for the Tailings Impoundment. General monitoring of the KUCC well network is performed to develop a data base and identify trends. Compliance monitoring is performed at selected wells located outside the impoundment footprint. Most sites are situated to characterize the influence of the tailings disposal on ground water. Compliance monitoring wells are listed in Table 1 of the Permit. The compliance monitoring parameters are listed in

Permit Part 1, Section F.

Basis for Specific Permit Conditions

1. Corrective Action - Please see the discussion on Page 4 of this Statement of Basis for an explanation of the rational for this condition.

2. Assessment of Acidification Potential - Ongoing analysis and testing is being required to assess the potential for the tailings material to acidify. Kinetic humidity cells testing has been replaced by Net Acid Generation (NAG) testing. Kennecott is required to provide an annual report that compiles the results of each years sampling and analysis.

3. Operational Monitoring Plan - A water quality summary and analysis will be required to assess long term changes to water quality over the life of this structure. The water quality of interstitial waters within the tailings, waters that are decanted from the top of the impoundment and other outflows such as seeps, and characterization of inflows will provide information that will assist in predicting potential impacts from the impoundment as well as track changes over time. This condition requires Kennecott to provide an annual report that compiles the results of each years sampling and analysis.

4. Permit Renewal Application Items - This condition requires three items to be included in the application for permit renewal to be submitted 180 days prior to permit expiration in the year 2011. Maps of the potentiometric surface for both the shallow and principal aquifer systems will be required in order to observe temporal changes to these aquifer systems near the impoundment, and monitoring results for radionuclides and uranium in wells NET1386A&B and NET1393A&B.

5. Closure Plan - Final closure of the South Impoundment is complete. Any proposed changes to the current closure plan based on ongoing characterization of tailings mineralogy, impoundment surface oxidation, internal pore water chemistry, or other data, shall be submitted to the Executive Secretary for review and approval.

Table S-1

Water Quality Summary of Tailings Impact to Ground Water

Constituent	Mean Concentrations in Shallow Aquifer	Mean Concentrations in Principal Aquifer	Mean Concentrations in Tailings Pore Waters [3]	Mean Concentrations in Clarification Canal [1]
pH	7.5	7.6	7.3	7.8
TDS	22373	6573	5591	9030
Sulfate [2]	1900	360	1700	3569
Arsenic	0.043	0.071	0.038	0.052
Barium	0.137	0.127	0.022	0.103
Cadmium	0.002	0.001	0.003	0.006
Chromium	0.004	0.004	0.007 (51% ND)	<0.010 (ND)
Copper	0.118	0.032	0.023	0.053
Lead	0.001	0.001	89% ND	<0.005 (ND)
Selenium	0.005	0.006	0.002	0.026
Silver	0.002	0.001	94% ND	<0.001 (ND)
Zinc	0.022	0.022	0.165	0.017

All concentrations in mg/l
ND - Non Detects
1 CLC 452 : approximate mean 1991-2005. Leach water added to circuit beginning in 1998
2 Sulfate values for Shallow and Principal Aquifers were obtained from Shepherd Miller 1995
3 Values for tailings pore waters were obtained from tailings operational wells

TABLE 1 Compliance Monitoring Well Protection Levels UGW350011

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NEL532A** Class III				Monitoring Well **NEL532B** Class III			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	8.03	0.18	6.5 - 8.5		7.5	0.17	6.5 - 8.5	
Arsenic	0.05	0.183	0.041	0.183 [a]	0.265	0.236	0.025	0.236 [a]	0.286
Barium	2	0.102	0.015	1.000	0.132	1.45	0.135	1.00	1.73
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.050	0.010
Copper	1.3	nd	n/a	0.650	0.020	0.017	0.013	0.650	0.043
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	nd	n/a	2.50	0.010	0.021	0.018	2.50	0.057
Sulfate	-	449	221	674	891	49	17	74	83
TDS	3000	6723	304	8403	7331	7139	589	10000 [b]	8317

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NEL536A** Class II				Monitoring Well **NEL536B** Class II			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	7.6	0.14	6.5 - 8.5		7.9	0.17	6.5 - 8.5	
Arsenic	0.05	0.04	0.008	0.050	0.056	0.021	0.008	0.027	0.037
Barium	2	0.213	0.047	0.500	0.306	0.070	0.017	0.500	0.105
Cadmium	0.005	nd	n/a	0.0013	0.001	nd	n/a	0.0013	0.001
Chromium	0.1	nd	n/a	0.025	0.010	nd	n/a	0.025	0.010
Copper	1.3	nd	n/a	0.325	0.020	nd	n/a	0.325	0.020
Se (hydride)	0.05	0.002	0.001	0.013	0.003	nd	n/a	0.013	0.002
Zinc	5	0.027	0.011	1.25	0.050	nd	n/a	1.25	0.010
Sulfate	-	322	36	402	394	50	7	63	64
TDS	3000	2184	2730	2788	3261	794	33	993	860

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NED604A** Class II				Monitoring Well **NED604B** Class II			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	7.31	0.16	6.5 - 8.5		7.65	0.12	6.5-8.5	
Arsenic	0.05	0.05	0.009			0.017	0.006	0.021	0.029
Barium	2	0.029	0.023	0.500	0.074	0.044	0.007	0.500	0.058
Cadmium	0.005	nd	n/a	0.0013	0.001	nd	n/a	0.0013	0.001
Chromium	0.1	nd	n/a	0.025	0.010	nd	n/a	0.025	0.010
Copper	1.3	nd	n/a	0.325	0.020	nd	n/a	0.325	0.020
Se (hydride)	0.05	nd	n/a	0.0125	0.002	nd	n/a	0.0125	0.002
Zinc	5	0.019	0.014	1.25	0.010	0.013	0.01	1.25	0.016
Sulfate	-	534	185	668	904	108	18	138	144

TABLE 1 Compliance Monitoring Well Protection Levels UGW350011

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET646A** Class IV				Monitoring Well **NET646B** Class IV			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	6.95	0.18	6.5 - 8.5		7.3	0.13	6.5 - 8.5	
Arsenic	0.05	0.078	0.022	0.078 [a]	0.122	0.137	0.044	0.225	0.225
Barium	2	0.076	0.017	2.00	0.110	0.071	0.01	2.00	0.091
Cadmium	0.005	nd	n/a	0.005	0.001	nd	n/a	0.005	n/a
Chromium	0.1	0.019	0.007	0.100	0.033	0.015	0.005	0.100	0.025
Copper	1.3	0.084	0.025	1.300	0.134	0.093	0.104	1.300	0.301
Se (hydride)	0.05	0.003	0.001	0.050	0.002	0.005	0.004	0.050	0.013
Zinc	5	0.028	0.024	5.00	0.076	0.014	0.003	5.00	0.020
Sulfate	-	4276	1807	7890	7890	1159	144	1738	1447
TDS	3000	72000	20185	none	none	41920	2878	none	none

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1380A** Class III				Monitoring Well **NET1380B** Class II			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	7.68	0.120	6.5 - 8.5		8.22	0.110	6.5 - 8.5	
Arsenic	0.05	0.012	0.005	0.025	0.022	nd	n/a	0.013	0.005
Barium	2	0.138	0.050	1.00	0.238	0.056	0.007	0.500	0.070
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	0.015	0.006	0.050	0.010	nd	n/a	0.025	0.010
Copper	1.3	nd	n/a	0.650	0.020	nd	n/a	0.325	0.020
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.013	0.002
Zinc	5	0.013	0.006	2.50	0.010	nd	n/a	1.25	0.010
Sulfate	-	561	96	842	753	7	1.50	15	10
TDS	3000	3566	359	4458	4284	1226	55	1532	1336

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1381A** Class III				Monitoring Well **NET1381B** Class III			
		Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L)		Protection Level (mg/L)	Compliance Limit (mg/L)
		mean	stdev			mean	stdev		
pH (units)	6.5-8.5	7.84	0.14	6.5 - 8.5		7.5	0.16	6.5 - 8.5	
Arsenic	0.05	0.047	0.012	0.05	0.071	0.131	0.021	0.131 [a]	0.175
Barium	2	0.085	0.011	1.00	0.107	0.072	0.012	1.00	0.1
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.050	0.010
Copper	1.3	nd	n/a	0.650	0.020	nd	n/a	0.650	0.020
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	nd	n/a	2.50	0.010	nd	n/a	2.50	0.010
Sulfate	-	278	55	417	388	851	81	1277	1013

TABLE 1 Compliance Monitoring Well Protection Levels

UGW350011

TDS	3000	2107	669	2634	3445	1261	54	1564	1369
Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1382A** Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Monitoring Well **NET1382B** Class III Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.92	0.21	6.5 - 8.5		8.27	0.170	6.5 - 8.5	
Arsenic	0.05	0.199	0.044	0.199 [a]	0.287	0.322	0.044	0.322 [a]	0.410
Barium	2	0.090	0.030	1.000	0.015	0.063	0.007	1.000	0.077
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.050	0.010
Copper	1.3	nd	n/a	0.650	0.020	nd	n/a	0.650	0.020
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	nd	n/a	2.50	0.010	nd	n/a	2.50	0.010
Sulfate	-	188	62	282	312	70	8	105	86
TDS	3000	5150	640	6438	6430	1789	80	2236	1949

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1382C** Class III Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Monitoring Well **NET1387** Class II Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	8.51	0.180	6.5 - 8.5		7.37	0.120	6.5 - 8.5	
Arsenic	0.05	0.459	0.058	0.459 [a]	0.575	0.025	0.008	0.031	0.041
Barium	2	0.048	0.018	1.00	0.084	0.042	0.007	0.500	0.056
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.025	0.010
Copper	1.3	nd	n/a	0.650	0.020	nd	n/a	0.325	0.020
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.013	0.002
Zinc	5	0.010	0	2.50	0.010	nd	n/a	1.25	0.010
Sulfate	-	64	7	96	78	319	32	400	383
TDS	3000	1354	193	1692	1741	1486	94	1858	1675

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1383A** Class III Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Monitoring Well **NET1383B** Class III Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.88	0.13	6.5 - 8.5		7.94	0.13	6.5 - 8.5	
Arsenic	0.05	0.220	0.029	0.220 [a]	0.278	0.22	0.037	0.220[b]	0.294
Barium	2	0.053	0.011	1.00	0.074	0.057	0.01	1.00	0.077
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.050	0.010
Copper	1.3	0.03	0.01	0.650	0.05	nd	n/a	0.650	0.05
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	nd	n/a	2.50	0.010	nd	n/a	2.50	0.010

TABLE 1 Compliance Monitoring Well Protection Levels

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TDS	3000	4200	150	5250	4500	8397	600	10000 [b]	9597
		Monitoring Well **NET1384A**			Class IV	Monitoring Well **NET1384B**			Class IV
Parameter	Utah Ground Water Quality Standard (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	6.95	0.21	6.5 - 8.5		7.47	0.16	6.5 - 8.5	
Arsenic	0.05	0.063	0.025	0.063 [a]	0.113	0.187	0.051	0.187 [a]	0.29
Barium	2	0.043	0.02	2	0.083	0.026	0.007	2.00	0.04
Cadmium	0.005	nd	n/a	0.005	0.001	nd	n/a	0.005	0.001
Chromium	0.1	0.018	0.004	0.050	0.01	0.016	0.005	0.100	0.026
Copper	1.3	0.146	0.244	1.3	0.634	0.1	0.055	1.3	0.21
Se (hydride)	0.05	nd	n/a	0.05	0.002	nd	n/a	0.05	0.002
Zinc	5	0.024	0.021	5.0	0.066	0.017	0.012	5.00	0.040
Sulfate	-	4222	1553	7500	7500	2103	131	3154	2365
TDS	3000	123971	58056	none	none	23951	827	none	none

		Monitoring Well **NET1385A**			Class III	Monitoring Well **NET1385B**			Class III
Parameter	Utah Ground Water Quality Standard (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.95	0.12	6.5 - 8.5		7.78	0.15	6.5 - 8.5	
Arsenic	0.05	0.106	0.012	0.106 a	0.13	0.139	0.03	0.139 [a]	0.199
Barium	2	0.048	0.01	1.00	0.068	0.061	0.014	1.00	0.089
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.050	0.010	nd	n/a	0.050	0.010
Copper	1.3	0.028	0.01	0.65	0.05	0.026	0.007	0.65	0.040
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	nd	n/a	2.5	0.010	nd	n/a	2.5	0.010
Sulfate	-	141	12	212	165	166	15	249	196
TDS	3000	3979	134	4975	4247	5561	238	6951	6037

		Monitoring Well **NET1386A**			Class III	Monitoring Well **NET1386B**			Class III
Parameter	Utah Ground Water Quality Standard (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Background Level (mg/L) mean	Background Level (mg/L) stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.68	0.140	6.5 - 8.5		7.59	0.150	6.5 - 8.5	
Arsenic	0.05	0.012	0.009	0.018	0.030	0.057	0.007	0.057 [a]	0.071
Barium	2	0.893	0.134	1.34 [a]	1.161	0.214	0.032	1.00	0.278
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	0.016	0.005	0.050	0.026	nd	n/a	0.050	0.010
Copper	1.3	0.040	0.015	0.650	0.070	nd	n/a	0.650	0.050
Se (hydride)	0.05	nd	n/a	0.025	0.002	nd	n/a	0.025	0.002
Zinc	5	0.016	0.006	2.50	0.028	nd	n/a	2.5	0.010

TABLE 1 Compliance Monitoring Well Protection Levels UGW350011

Sulfate	-	218	29	327	276	186	14	279	215
TDS	3000	7067	162	8834	7391	6558	207	8192	6972

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1393A** Class IV Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Monitoring Well **NET1393B** Class IV Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.65	0.17	6.5 - 8.5		7.55	0.17	6.5 - 8.5	
Arsenic	0.05	0.041	0.015	0.05 [b]	0.071	0.061	0.017	0.061 [a]	0.096
Barium	2	2.21	0.273	2.00 [b]	3.00	0.194	0.035	2.00 [b]	0.264
Cadmium	0.005	nd	n/a	0.005	0.001	nd	n/a	0.005	0.001
Chromium	0.1	nd	n/a	0.100	0.010	nd	n/a	0.100	0.010
Copper	1.3	nd	n/a	1.300	0.05	nd	n/a	1.300	0.05
Se (hydride)	0.05	0.024	0.013	0.050	0.05	nd	n/a	0.050	0.002
Zinc	5	nd	n/a	5.00	0.010	nd	n/a	5.00	0.010
Sulfate	-	50	15	80	80	97	19	135	135
TDS	3000	12123	363	none	none	10963	352	none	none

Parameter	Utah Ground Water Quality Standard (mg/L)	Monitoring Well **NET1491** Class II Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)	Monitoring Well **NET1492** Class III Background Level (mg/L) mean	stdev	Protection Level (mg/L)	Compliance Limit (mg/L)
pH (units)	6.5-8.5	7.17	0.09	6.5 - 8.5		7.14	0.11	6.5 - 8.5	
Arsenic	0.05	0.006	0.001	0.013	0.008	nd	n/a	0.025	0.001
Barium	2	0.023	0.003	0.500	0.029	0.022	0.004	0.500	0.03
Cadmium	0.005	nd	n/a	0.003	0.001	nd	n/a	0.003	0.001
Chromium	0.1	nd	n/a	0.025	0.010	nd	n/a	0.050	0.010
Copper	1.3	nd	n/a	0.325	0.020	nd	n/a	0.65	0.05
Se (hydride)	0.05	0.007	0.002	0.013	0.011	0.006	0.002	0.025	0.010
Zinc	5	nd	n/a	1.25	0.010	nd	n/a	2.5	0.010
Sulfate	-	557	85	696	727	629	118	943	865
TDS	3000	2780	251	3000 [b]	3282	2998	342	3747	3682

nd = non-detect n/a = not applicable

Protection Level established by the greater of 1.X times the measured background concentration, or 0.X times the Ground Water Quality Standard

Compliance Limits are calculated from the mean of measured concentrations + 2 standard deviations, or method detection limit

Protection Level for Class IV well will be the Ground Water Quality Standard

a - Background value exceeds ground water standard; Protection Level = background (no net increase approach)

b - 1.X times background exceeds ground water quality standard; Protection Level = ground water quality standard

TABLE 1 Compliance Monitoring Well Protection Levels UGW350011

Sulfate	-	22	11	33	44	48	10	72	68
TDS	3000	8532	213	10000 [b]	8958	8333	295	10000 [b]	8925

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